

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

# PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/JP2004/015328

International filing date (day/month/year)  
08.10.2004

Priority date (day/month/year)  
20.10.2003

International Patent Classification (IPC) or both national classification and IPC  
H01L27/06, H01L27/088, H01L21/762, H01L21/8234

Applicant  
TOYOTA JIDOSHA KABUSHIKI KAISHA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/JP2004/015328

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**Box No. II Priority**

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1. ☐ The following document has not been furnished:

☐ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. ☒ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

4. Additional observations, if necessary:

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**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	4-14
	No: Claims	1-3
Inventive step (IS)	Yes: Claims	
	No: Claims	1-14
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

**see separate sheet**

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**Box No. VI Certain documents cited**

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1. Certain published documents (Rules 43*bis*.1 and 70.10)

and /or

2. Non-written disclosures (Rules 43*bis*.1 and 70.9)

**see form 210**

**The following comments relate to items of the cover sheet where the corresponding cases have been crossed, as well as to eventual aspects concerning the form and content of the application and clarity of the claims.**

- 1 Reference is made to the following documents:  
  
D1: US 2002/043699 A1 (AKIYAMA HAJIME) 18 April 2002 (2002-04-18)  
D2: GB-A-2 310 081 (INTERNATIONAL RECTIFIER CORPORATION) 13 August 1997 (1997-08-13)
- 2 The present application does not meet the requirements of Article 6 PCT, because claims 1, 4, 6, 7, 12 and 13 are not clear.  
Although claims 1, 4, 6, 7, 12 and 13 have been drafted as separate independent claims, they relate to the same subject-matter and differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.
- 3 The present application does not comply with Article 33(2) PCT because the subject-matter of claims 1-3 is not new.
  - 3.1 The subject-matter of independent claim 1 is fully anticipated by the content of document D1 (cf. Figures 16-17 and associated text), which discloses semiconductor device having a high voltage region (HR), a low voltage region (connected to D1), a high withstand voltage region (620, 630, 640) separating the high voltage region and the low voltage region, a relay (NR, PR), an insulating partition (620, 630, 640) having a trench filled with insulating material (601) between the relay and one of the high voltage and low voltage regions, an output wiring (SL1, G1, D1) between the relay and the high voltage region or low voltage region bridging over the insulating partition.

- 3.2 The additional technical features of dependent claims 2-3 are also already known from the disclosure of document D1 (cf. Figures 16-17 and associated text).
- 4 The present application does not comply with Article 33(3) PCT because the subject-matter of claims 4-14, as long as the claims can be understood with the help of the description and drawings (cf. item 2 above), does not involve an inventive step.
- 4.1 The subject-matter of present claim 4 differs from the disclosure of document D1 (cf. figures 16-17 and associated text) in that the relay is arranged to form a ring shape which separates the high and low voltage regions. The objective problem to be solved derivable therefrom and solution thereto is, however, already known from document D2 (cf. page 3, lines 13-18; figures 3-15). Thus, it would be obvious to the skilled person to use the teaching of D2 and provide in a device as disclosed in D1 a relay being arranged to form a ring shape which separates the high and low voltage regions. Therefore, the subject-matter of present claim 4 does not involve an inventive step.
- 4.2 The additional technical features of claims 5-14 (the features of claims 6, 7, 12 and 13 considered as dependent from claim 4) are obvious choices or modifications readily available to the skilled person. Therefore, the subject-matter of claims 5-14 does not involve an inventive step.
- 5 The following deficiencies should also be noted:
- 5.1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in documents D1-D2 is not mentioned in the description, nor are these documents identified therein.
- 5.2 Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art being placed in a preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in a characterising part (Rule 6.3(b)(ii) PCT).

- 5.3 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).